ROTATING BED WITH IMPROVED STABILITY

[0001] A rotating bed known from DE 199 12 937 has a height-adjustable base. The base stands freely in a conventional bed frame. A rotary joint arranged on the base serves to connect the base to a bed or mattress frame. The bed or mattress frame is frequently divided into four sections, viewed in the longitudinal direction of the bed, namely a back part or back section, a central section, a thigh section and a lower leg section.

[0002] The central section is directly connected to the base by means of the rotary joint, the axis of which extends vertically. The back section is coupled to the central section by means of a hinge arrangement with a horizontal axis, just as the thigh section is also connected to the central section, but on the opposite end. The lower leg section is coupled to the free end of the thigh section by means of a hinge arrangement with a horizontal axis.

[0003] In order to achieve the highest stability possible, the base has relatively large dimensions in the longitudinal direction of the bed. However, it cannot project beyond the structure clearance of the bed frame in the lateral direction.

[0004] In the normal bed or sleeping position, the bed frame is essentially flat and its longitudinal axis extends parallel to the longitudinal axis of the floor coverage area defined by the contact points between the base and the floor.

[0005] In order to transfer the person lying in the bed into a sitting position, the back section is initially raised into an approximately 80° position with the aid of a motor. The thigh section and the lower leg section are also moved into a slightly raised position in order to provide the user with a sense of stability during the subsequent rotation.

[0006] After the bed frame is moved into this position, it is turned on the base by approximately 90° until the thigh section and the lower leg section transversely extend over the side of the bed. The term side of the bed refers to the conventional definition.

[0007] As soon as the bed frame is transversely aligned in this fashion, the thigh section and the lower leg section are lowered, wherein the lower leg section is lowered to such a degree that it essentially extends vertically. The bed frame now has a chair-like configuration, in which the free end of the lower leg section is practically in contact with the floor.

[0008] In this case, the front edge of the seat projects significantly beyond the floor coverage area of the base for technical reasons. This arrangement may approach its stability limit, particularly when the bed frame is raised, depending on the weight of the user, the distance by which the user leans forward over the seat edge in the chair position, the weight of the base, the size of the floor coverage area of the base and any impermissible manipulations on the patient during the rotation. If the stability limit is exceeded, the bed would completely tip over on the side concerned, and the user would be trapped underneath the bed.

[0009] Based on these circumstances, the invention proposes to develop a rotating bed that is characterized by an improved stability.

[0010] The rotating bed of the invention stands on the floor with a base, wherein the contact points between the base and the floor define the floor coverage area. The floor coverage area is usually rectangular. The longer sides of the rectangle extend parallel to the longitudinal direction of the bed. The bed frame arrangement is mounted on the base with the aid of a rotary joint, such that the bed frame can rotate relative to the base by at least 90° about a vertical axis of rotation. In the normal bed or sleeping position, the longitudinal axis of the bed frame is aligned parallel to the longitudinal axis of the floor coverage area, with these axes extending perpendicular to one another in the chair position.

[0011] In order to increase the stability, at least one additional support leg is provided on the base. This additional support leg projects from the floor coverage area in a direction that essentially extends perpendicular to the longitudinal direction of the rotating bed in the normal bed or sleeping position.

[0012] The additional support leg increases the floor coverage area by comparison to the floor coverage area of a base without an additional support leg, in the direction in which the bed frame projects in the chair position.

[0013] Depending on the embodiment, the floor coverage area of the base may be defined by rails or bars, rigid legs or rotatably mounted wheels.

[0014] The utilization of at least one additional support leg is particularly advantageous in connection with steerable wheels. Depending on the caster of the steerable wheels, the width of the floor coverage area may vary by up to 10 cm according to the steering position of the wheels. Relative to a normal floor coverage area width of approximately 75 cm, this is a considerable value that can significantly influence the stability.

[0015] The utilization of wheels or legs makes it possible to raise the lower edge of the base off the floor such that the hospital personnel caring for the patient lying in the bed can stand as close to the bed as possible, because the front of their feet can be placed underneath the raised base.

[0016] If the bed is equipped with wheels, two wheels need to be provided with brakes so as to ensure that the bed cannot roll away in the chair position. The brakes should be arranged on the wheels that are situated distant from the foot section in the chair position.

[0017] Depending on the design of the bed, one or more support legs may be realized rigidly or movably. Rigid support legs are in particular used when the bed is essentially arranged in a stationary fashion. Movable support legs equipped with the above-mentioned wheels are preferably utilized on mobile beds, such as are used, for example, in nursing homes and the like.

[0018] The utilization of a movable support leg makes it possible to eliminate a stumbling hazard as would be created if the support leg is significantly elevated relative to the floor and laterally projects beyond the structure clearance of the bed in the sleeping position.

[0019] When using rigid support legs, it is particularly advantageous for the free end of the support leg to end in a thin support plate. The support plate is only slightly elevated relative to the floor and does not represent a stumbling hazard, even if it always projects laterally beyond the structure clearance of the bed.

[0020] The movable support leg is moved back into a position in which it only projects slightly, if at all, beyond the structure clearance from a position in which it projects not only beyond the structure clearance in the sleeping position, but preferably also the structure clearance defined by the bed frame in the chair configuration.

[0021] This movement can be advantageously combined with a vertical movement such that the clearance space underneath the base is preserved in its entirety over the whole floor coverage area. This is important if it is intended that lifters should be able to reach beneath it.

[0022] When utilizing a movable support leg, it is advantageous for the free end of the support leg to be connected to a roller that enables the support leg to roll freely on the floor when it is moved from one end position to the other end position, and vice versa.

[0023] The movable support leg is preferably provided with an articulation that is situated distant from the projecting end. It is preferred to arrange the articulation on the end of the support leg that is always situated directly on the base.

[0024] The articulation may have one or two axes, depending on the design of the support leg and its travel path. In case an articulation with two axes is provided, one axis consists of a translatory axis and the other of a rotatory axis.

[0025] The articulation arrangement makes it possible to move the support leg along a path with at least one component that is aligned transverse to the longitudinal direction of the bed in the sleeping position.

[0026] Such a travel path is also effected if the support leg needs to be turned about an at least approximately vertical axis in order to be moved from the idle or parking position into the supporting position.

[0027] An articulation arrangement with two axes may comprise, for example, two toothed racks that are arranged parallel to, and spaced apart from one another. The two toothed racks are mounted on the base and mesh with corresponding pinion gears, with the pinion gears being rigidly connected to one another by means of a shaft on which the support leg is pivotably supported.

[0028] The retracted position of the support leg preferably is defined by a limit stop that operates outside the plane in which a drive unit for moving the support leg engages. This is realized in such a way that the support leg is automatically pivoted upward when it comes in contact with the limit stop.

[0029] A particularly stable arrangement is achieved if two support legs are provided and coupled to one another. A common articulation may be provided for both support legs in this case.

[0030] The hospital or nursing home personnel are able to approach the bed very closely if the base has at least one longitudinal edge that is spaced apart from the floor at least in a central region relative to the longitudinal direction of the rotating bed in the normal bed or sleeping position.

[0031] Very stable conditions for the support leg are achieved if the support leg can be moved back and forth in the gap between the edge and the floor. In this case, the base forms an abutment for the support leg when it is situated in the supporting position.

[0032] Additional developments of the invention form the objects of the dependent claims. In this respect, the invention also claims combinations of characteristics that do not refer to a specific embodiment.

[0033] Embodiments of the object of the invention are illustrated in the figures. The figures show:

[0034] Figure 1, a perspective representation of a rotating bed, in the form of a hospital or nursing home bed, in the sleeping position;

[0035] Figure 2, a perspective representation of the rotating bed shown in Figure 1, in the chair position;

[0036] Figure 3, a perspective representation of the articulation arrangement for guiding the two additional support legs;

[0037] Figure 4, a simplified perspective representation of an embodiment of the rotating bed according to the invention, with a single pivoted support leg;

[0038] Figure 5, an enlarged perspective representation of the support leg coupling, wherein the support leg is not illustrated in its entirety;

[0039] Figure 6, the detail according to Figure 5, wherein the support leg is illustrated in a side view, and

[0040] Figure 7, a simplified perspective representation of a home care bed that is also realized in the form of a rotating bed with an immovable support leg.

[0041] Figures 1 and 2 show simplified oblique views of a rotating bed 1 that is intended for use in nursing homes or hospitals. The rotating bed essentially consists of a height-adjustable base 2 that stands on the floor and carries a rotary mechanism that is schematically indicated in Figure 2 at its upper end. The rotary mechanism has a vertical axis of rotation. A bed frame that is identified with the reference symbol 4 is connected to the base 2 by means of the rotary mechanism 3. The bed frame 4, of which only the longitudinal rails are visible in the respective figures, is divided into at least three sections. In this respect, the visible sections of the longitudinal rails are provided with the substitutional reference symbols for the sections of the bed frame.

[0042] A center or central section 5 is directly connected to the upper end of the base 2 by means of the rotary mechanism 3. A back section is coupled to the upper end of the central section 5 with the aid of two hinges 7 that are aligned with one another and interconnect the rails of the respective sections. The two hinges 7 make it possible to pivot the back section 6 relative to the central section about a horizontal axis.

[0043] On the lower end of the central section 5, a lower leg section 8 is connected to the central section 5 by means of hinges 9. The hinges 9 make it possible to pivot the lower leg section 8 relative to the central section 5 about a horizontal axis.

[0044] In order to improve the sleeping comfort, the central section 5 may be additionally divided into an immovable section and a thigh section. This variation is not illustrated in the figures because it is not essential to comprehending the invention.

[0045] A mattress 11 lies on the previously described bed frame 4. The length of the mattress is adapted to a chair position that is illustrated in Figure 2, and is not sufficiently long for a normal bed. This is the reason that another essentially immovable mattress section 12 is used for extending the mattress 11.

[0046] The height-adjustable base 2 contains two longitudinal rails 13a and 13b that are aligned parallel to one another and to the longitudinal axis of the rotating bed 1 in the sleeping position illustrated in Figure 1. Steerable wheels 14 are arranged on the ends of the two longitudinal rails 13a and 13b, said wheels being rotatable about a vertical axis by means of steerable forks 15 supported in the respective longitudinal rails 13a and 13b.

[0047] The points in which the wheels 14 are in contact with the floor represent the floor contact points and define a floor coverage area that is approximately rectangular. The deviation from the rectangular shape is caused by the steerability of the wheels 14. A more or less significant deviation from the rectangular shape occurs depending on the caster and the steering position of the wheels.

[0048] The two longitudinal rails 13a and 13b are rigidly interconnected by means of two transverse rails 16a and 16b.

[0049] The upper end of the base is formed by a rectangular frame 17 that is composed of two parallel longitudinal rails 18a and 18b, as well as two transverse rails 19, only one of which is visible in the figure.

[0050] A total of 4 knee levers 19a and 19b are hinged to the two lower longitudinal rails 13a and 13b, wherein only the knee levers that face the observer are visible in Figure 1. Two additional knee levers are arranged in an axially parallel fashion on the other side, in mirror image to these visible knee levers.

[0051] The knee levers 19 serve to connect the lower longitudinal rails 13a and 13b to the upper frame 17. In the region of their knee joints 20a, 20b, the knee levers 19 on one side of the bed 1 are respectively connected by means of a coupling rod 21. The two coupling rods 21 are interconnected by means of a connecting brace 22, wherein a lifting motor, not shown, engages with the connecting brace 22. Another obliquely extending rod was omitted in the figures in order to provide a better overview. Comprehensive information on the design of the base can be obtained, for example, from DE 196 04 074, to which the inventors hereby refer.

[0052] Two braces 23a and 23b are connected to the end of the upper frame 17 on the side of the headboard. These braces serve to rigidly connect a headboard 24 to the base 2.

[0053] Two additional braces 25a and 25b project from the end of the frame 17 on the side of the footboard. These braces carry a footboard 26 that is aligned parallel to the headboard 24. The two braces 25a and 25b also support the lower mattress section 12, if applicable, by means of an intermediate spring element.

[0054] The described rotating bed 1 functions as described below:

[0055] In the normal sleeping position shown in Figure 1, the mattress 11 extends in the longitudinal direction between the headboard and the footboard 24, 26, with the mattress contacting the headboard 24. The gap on the footboard end is filled with the mattress 12. In this sleeping position, the patient lying on the mattress 11, 12 can be arbitrarily raised and lowered by adjusting the height of the base 2. This is necessary, for

example, in order to move the patient to a height at which the nursing home or hospital personnel are able to comfortably perform the required procedures on the patient. However, the patient finds this height uncomfortable when no procedures are being performed. This is the reason that the bed can also be lowered to a normal bed height.

[0056] In addition, the back section 6 and/or the foot section 8 can be arbitrarily pivoted upward in the sleeping position, with the aid of electric motors.

[0057] When the patient lying in the bed needs to be mobilized or wants to get out of bed despite physical disabilities, the bed can be converted from the position shown in Figure 1 into the position shown in Figure 2 by means of electric motors and a corresponding control unit. In such instances, the back section 6 is initially raised from the sleeping position shown in Figure 1 until the back of the patient is in a comfortable upright position.

[0058] The lower leg section 8 is also raised. This results in two advantages. The patient senses a certain support in the trough-like configuration of the mattress frame 4, and the bottom edge of the lower leg section 8 is raised to a height that lies above the upper edge of the mattress section 12. Once this position is reached, the mattress frame 4 can be rotated about the vertical axis with the aid of an electric motor, not shown, and the control unit. Relative to a top view of the described embodiment, the mattress frame is turned in the counterclockwise direction until the foot section 8 projects over the left side of the bed. In this position, the hinge axes of the hinges 7 and 9 are aligned parallel to the longitudinal direction of the rotating bed 1. The foot section 8 can then be pivoted downward into the position shown in Figure 2 with the aid of an electric motor. The back section 6, the central section 5 and the foot section 8 are then positioned such that the chair-like configuration according to Figure 2 is realized.

[0059] It can be seen that the external drives make it possible for the patient to convert the bed from the sleeping position to the sitting position without the assistance of the nursing home or hospital personnel. Once the sitting position is reached, the legs of the patient hang over the side of the bed and the patient is able to stand up. The length of the lower leg section 8 is chosen accordingly.

[0060] Due to the design and the anatomy of the human body, in chair position 2 the axis of the hinges 9 that are situated underneath the thighs, and set back relative to the hollow of the knee, is positioned outside the floor coverage area defined by the wheels 14. In this respect, the edge of the floor coverage area that is defined by the wheels on the longitudinal rail 13b is of particular importance, because this edge lies on the side on which the rotating bed 1 would tip over in case of an overload. If one projects the hinge axes 9 on the floor and measures the distance from the aforementioned line, it becomes clear that this distance depends on the steering position of the wheels 14. If the wheels in Figure 2 point in the direction of the observer, the shortest distance is measured and the highest stability is achieved. The stability is lower when the steering wheels point away from the observer and consequently depends on the random steering position of the wheels 14. This means that the stability could possibly reach its limit if heavy patients are awkwardly seated on the mattress frame in the chair position.

[0061] In order to reliably prevent the bed from tipping over the longitudinal rail 13b, the invention proposes to provide two selectively extendible support legs 30a and 30b. The two support legs and 30a and 30b are illustrated in the extended position in Figure 2 and laterally project from the floor coverage area defined by the 4 wheels 14, as shown. They laterally encompass the foot section 8 that points toward the floor, and ensure that the tip-over edge of the bed is no longer defined by the wheels 14 on the longitudinal rail 13b, but rather by the free ends of the legs 30a and 30b. If these contact points lie beyond the projected axis of the hinges 9, it is impossible for the bed to tip over at this location, independently of the load. In this case, the stability limit cannot be exceeded, even if the nursing home or hospital personnel lean on the bed while it is turned.

[0062] The two support legs 30a and 30b are only extended when they are needed, i.e., only in the chair position shown in Figure 2. Otherwise, they would form a serious stumbling hazard. This is why the support legs are retracted between the two rails 13a and 13b and raised off the floor in the sleeping position shown in Figure 1. For reasons of simplicity, only part of the support leg 30b is illustrated in Figure 1. The support leg 30a is not shown in the figure because this would unnecessarily complicate the figure, and one would no longer be able to see the essential aspects of the invention.

[0063] The support arrangement 31 shown in Figure 3 is provided for connecting the support legs 30a and 30b to the base 2.

[0064] The support arrangement 31 includes two crossbeams 32 and 33, the ends of which are connected to the longitudinal rails 13a and 13b. These crossbeams extend perpendicular to the longitudinal rails 13a and 13b. Both crossbeams 32 have a C-shaped profile and are open on the sides that face one another. On their lower limbs 34, a toothed rack 35 is respectively provided such that it extends in the longitudinal direction of the crossbeams 32, 33. Due to the oblique view, only the closed back of the crossbeam 33 is visible in this figure. If this arrangement were viewed from the opposite side, this crossbeam would represent a mirror image of the crossbeam 32 shown.

[0065] A pinion gear 36 meshes with the toothed rack 35. A corresponding pinion gear meshes with the toothed rack provided in the crossbeam 33. The two pinion gears 36 are connected to one another in a rotationally fixed fashion by means of a shaft 37 that lies parallel to the longitudinal rails 13a and 13b.

[0066] The shaft 37 extends through a tubular connecting brace 38 that rigidly interconnects the inner ends of the two support legs 30a and 30b that are aligned parallel to one another and, in other respects, are realized in the form of straight square tubes.

[0067] A bracket 39 projects upward approximately in the center of the connecting brace 38, and is coupled to an actuating rod 41 of a driving motor 42. The other end of the motor 42 is anchored on a bracket 43 mounted on the longitudinal rail 13a.

[0068] In addition, a limit stop 44 projects from the inner side of the longitudinal rail 13a in the direction of the opposite longitudinal rail 13b. The support arrangement 31 cooperates with the driving motor 42 as described below:

[0069] Figure 3 shows the support legs 30a and 30b in an intermediate position between the completely extended position in which the support legs 30a and 30b are in the supporting position and a parking position in which they are retracted between the two longitudinal rails 13a and 13b and raised off the floor.

[0070] When the support legs 30a and 30b need to be moved into the parking position from the position shown in Figure 3, the driving motor 42 retracts the actuating rod 41 in the direction of the longitudinal rail 13a. During this process, the rear ends of the support legs that are supported on the shaft 37 move in the direction of the longitudinal rail 13a, wherein the pinion gears 36 act as wheels. Since the pinion gears mesh with the toothed racks 35, the movements of the crossbeams 32 and 33 are synchronized, and they are prevented from becoming jammed.

[0071] The connecting brace 38 comes in contact with the limit stop 44 as soon as the free ends of the support legs 30a and 30b are retracted behind the structure clearance of the longitudinal rail 13b. Since this contact point lies lower than the point at which the actuating rod 41 engages with the bracket 39, a torque is generated about the shaft 37 such that the support legs 30a and 30b are raised off the floor.

[0072] The driving motor 32 is switched off as soon as both support legs 30a and 30b are raised to such a degree that their free ends no longer project downward beyond a plane that is defined by the underside of the two longitudinal rails 13a and 13b. This position represents the parking position. In this position, lifting devices can be easily placed underneath the two longitudinal rails 13a and 13b. In addition, the personnel caring for the patient are not at risk of colliding with parts that project underneath the longitudinal rails 13a and 13b.

[0073] When the two support legs 30a and 30b need to be extended, the driving motor 32 is actuated in the opposite direction. Due to their own weight, the support legs 30a and 30b are initially pivoted downward until their free ends are in contact with the floor. Two rollers 45a and 45b that are rotatable about horizontal axes relative to the floor are provided on the free ends of the support legs 30a and 30b in order to prevent the floor from being damaged during the additional extension of the support legs. The axes of rotation of the aforementioned rollers lie perpendicular to the travel direction of the support legs 30a and 30b during their extension.

[0074] Their own weight initially causes both support legs 30a and 30b to come in contact with the floor, wherein the support legs are subsequently extended laterally, relative to the bed, underneath the rail 13b. Since the contact force on the floor is defined by the weight of the support legs 30a and 30b, there is no risk of crushing or otherwise

injuring someone whose feet are positioned in the travel path of the support legs 30a and 30b. The forward movement does not cease until both support legs 30a and 30b come in contact with the bottom of the longitudinal rail 13b with their upper side which faces the observer. Any jamming of the support legs during their movement is prevented by means of the pinion gears 36 that are coupled to one another in a rotationally fixed fashion and cooperate with the stationary toothed racks 35.

[0075] The motor 42 is switched off as soon as the support legs reach the above-described position, i.e., the supporting position. Both support legs 30a, 30b are now fixed underneath the rail 13b such that a three-point support is achieved for each rail. Each rail that is in contact with the floor by means of its roller 45 adjoins the adjacent lower edge of the longitudinal rail 13b a certain distance from the roller 45 and is supported on the respective crossbeam 32 or 33 a certain distance from this contact point at its end that is situated in the base 4, namely with the aid of the shaft 37 and the pinion gear 36.

[0076] In the described supporting position, both support legs 30a and 30b project beyond the floor coverage area of the rotating bed 1 in any pivoting or longitudinal position of the wheels 14.

[0077] Figure 4 shows an embodiment of the rotating bed 1 that utilizes only one support leg 30.

[0078] With the exception of the design and the coupling arrangement of the support leg 30, the bed 1 is realized in the same fashion as is described in detail above with reference to Figures 1 and 2. Consequently, the following description is limited to the design of the support leg 30 and its coupling arrangement.

[0079] According to Figure 4, the support leg 30 is hinged to the outer side of the longitudinal rail 13b. The hinge point is situated toward the foot side, such that a patient who sits on the bed in the chair position according to Figure 2 while the support leg 30 is extended would see the support leg 30 adjacent to the right side of the lower leg section 8. In the parking position, the support leg 30 is pivoted by 90° and extends parallel to the rail 13b, with its free end being simultaneously raised off the floor. The support leg 30

can be pivoted with the aid of the driving motor 32 that is connected by means of an actuating rod 43 to a bracket 44 projecting from the support leg 30.

[0080] In the supporting position, the support leg 30 extends transversely downward from its coupling point 47. In the parking position, the support leg lies parallel to the longitudinal rail 13b. This is achieved with a coupling point 47 that is illustrated in an enlarged fashion in Figures 5 and 6.

[0081] Two upwardly projecting brackets 48 and 49 are welded to the outer side of the longitudinal rail 13b, with a bearing bushing 51 being fixed to the free ends of the brackets. The bearing bushing 51 has a cylindrical bore that is not visible in the figures, wherein the axis of said bore lies in a vertical plane that is aligned perpendicular to the longitudinal axis of the rotating bed 1, i.e., perpendicular to the longitudinal axis of the longitudinal rail 13b. The bore axis is inclined in this imaginary plane such that it points away from the bed at the top and toward the bed at the bottom. In one practical version, the angle of inclination of the axis of the bore of the bearing bushing 51 lies at about 22° relative to the vertical line. However, this angle depends on the height of the longitudinal rail 13b relative to the floor and the required projecting length of the support leg 30.

[0082] On the end on the side of the bed, the support leg 30 ends in two parallel flanges 52 and 53 that cover the ends of the bearing bushing 51 as shown in Figure 6, i.e., the bearing bushing 51 extends between the two flanges 52 and 53 with a slight axial clearance. A hinge bolt 54 in the form of a cap screw extends through bores that are aligned with one another, with a nut 55 being threaded onto the downwardly projecting thread of the cap screw.

[0083] The projecting end of the support leg 30 is provided with a support plate 56. In the embodiment shown in Figures 5 and 6, the actuating tongue 44 is realized integrally with the upper flange 53 and projects over the longitudinal rail 13b into the interior of the base 2. An actuating rod that is symbolized by a broken line 57 [sic; 58] engages with a mounting hole 56 [sic; 57]. This actuating rod essentially extends parallel to the longitudinal rail 13b and connects the actuating tongue 44 to a motor, not shown.

[0084] When viewing the supporting position shown in Figures 5 and 6 from the top, the support leg 30 projects perpendicular to the longitudinal rails 13b. The underside of its support plate 56 may be in contact with the floor. However, the underside of the support plate preferably is spaced slightly apart from the floor by about 5 mm. In order to retract the support leg 30, it is turned about the hinge bolt 54 in the counterclockwise direction relative to Figure 5. During this process, the support plate 56 moves from the floor in the direction of the rail 13b along an inclined circular path. During this pivoting movement, the support plate 56 is simultaneously moved from the floor to a position above the underside of the longitudinal rail 13b. Due to these measures, no parts of the base 2 project downward beyond the lower edge of the longitudinal rails 13, so that the leg room is preserved over the entire area.

[0085] In the previous description of the embodiment shown in Figures 1-3, it was assumed that the support legs 30a and 30b contact the floor with a certain initial stress. The support leg 30 in the embodiment shown in Figures 4-6 is spaced slightly apart from the floor. This means that the tip-over line is initially defined by the connecting line between the corresponding adjacent wheels 14 that extends directly behind the foot section 8. If the stability limit is exceeded due to an awkward load, the bed slightly tips over along this line, namely until the support leg 30 contacts the floor. The tip-over line is now defined by the connecting line between the floor contact point of the support leg 30 and the adjacent wheel 14 situated closest to the headboard end. This straight line lies much closer to the axis of the hinges 9, such that an improved stability is achieved after the support leg 30 becomes effective. Since the stability normally suffices and is exceeded only in special instances, it is advantageous for the support leg 30 to initially be positioned slightly above the floor in the supporting position. In this case, the pivoting of the support leg 30 between the parking position and the supporting position does not produce any marks on the floor. This is particularly advantageous on soft floors. In addition, the support leg 30 can be made weaker in the embodiment with a floating support leg, since it needs to absorb only the additional tip-over force. In this case, the base and the remainder of the bed act as a counterweight and alleviate the support leg 30. Significantly higher forces can be supported, namely also in normal instances, in the embodiment according to Figure 3, in which the support legs 30a and 30b contact the floor with an initial stress from the beginning.

[0086] Figure 7 shows an embodiment of the rotating bed 1 that is also suitable for home care use. The essential difference can be seen in the utilization of an outer bed frame, wherein the headboard and the footboard 24, 25 are placed directly on the floor and are connected to one another by sideboards 61, 62. The base 4 stands stationarily on legs 63 in the thus-defined rectangular space, with the longitudinal rails 13 being reduced to the length of the longitudinal rails of the upper frame 17. The mattress section 12 is fixed within the bed frame independently of the base 4. In order to provide the base 4 with the highest stability possible, an additional rigid support leg 30 is mounted directly on the longitudinal rail 13a. This support leg laterally projects as far as possible over the floor coverage area defined by the legs 63, with the support plate 56 of the support leg projecting outward, if applicable, under the sideboard 61.

[0087] A rotating bed has a base for supporting an articulated mattress frame such that it can be rotated about a vertical axis. In one rotational position, the mattress frame can be converted into a chair-like configuration. In order to improve the stability of the arrangement in the chair position, at least one support leg is provided that, in the supporting position, either contacts the floor from the beginning or only makes contact with the floor when the stability limit without the support leg is exceeded.